The City of Norfolk's Program to Manage Beaches & Sand Dunes

Background

- Norfolk is the only jurisdiction in Virginia where sand dune regulation resides in the same office that is responsible for dune management. "We practice what we preach!"

- Prior to 1982, the City's efforts to stabilize dunes were largely unsuccessful due to - a lack of familiarity with dune processes, use of inappropriate "Cape" variety American Beach grass, and a typical governmental response of reactive removal of wind-blown sand instead of proactive stabilization.

- Over the last 33 years, our office has undertaken numerous projects in consultation with VIMS and in adherence to best practices in North Carolina Sea Grant's, The Dune Book and various US Army Corps of Engineers research publications.


1978


Ships Cabin


9 13 '85

- Our office has conducted field experiments on growing Atlantic Coastal Panic Grass from seed, transplanting Sea Oats, plant diversity assessments (VIMS), understanding and managing the “die-out phenomenon” of American Beach Grass, and modifying techniques to install sand fencing.

- Our office has an annual CIP budget of $100,000 to mitigate sand dune problems, plant dune vegetation, and undertake other sand dune management activities.

- Our office is a recognized leader in the Commonwealth on invasive dune plants. We were the only local government representative and speaker from Virginia at a national conference on Japanese Sedge. We were the first to identify Beach Vitex in Norfolk.

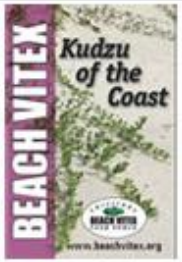

09/16/2008

BEACH VITEX TASK FORCE

About the Task Force

Identify and Report Beach Vitex

Task Force News and Archives



Resources to Learn More about Vitex

Task Force Photo Album

Contact Task Force Members

Contacts

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US Geological Survey, US Dept. of the Interior
Phone: 910-648-6762

2VAC5-317-20. Tier 1 and Tier 2 noxious weeds.

A. The following plants are hereby declared Tier 1 noxious weeds:

1. Vitex rotundifolia, Beach vitex.

2. Salvinia molesta, Giant salvinia.

3. Solanum viarum, Tropical soda apple.

4. Heracleum mantegazzianum, Giant hogweed.

5. Oplismenus hirtellus spp. undulatifolius, Wavyleaf basketgrass.

B. The following plants are hereby declared Tier 2 noxious weeds:

1. Imperata cylindrica, Cogon grass.

2. Lythrum salicaria, Purple loosestrife.

3. Ipomoea aquatica, Water spinach.

Statutory Authority

§ 3.2-802 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 31, Issue 9, eff. January 29, 2015.

THE CULTURE | GARDENING

Beach vitex invades Virginia Beach dunes

Imported to stabilize sand dunes, beach vitex is an invasive species that's tough to kill, Virginia Beach officials have found.

By AARON APPLEGATE, The Virginian-Pilot/AP | OCTOBER 21, 2009

Hyunsoo Leo Kim/The Virginian-Pilot/AP | View Caption

VIRGINIA BEACH, VA. — It's tough, kind of pretty, and poised to wreak havoc, say environmental officials who have discovered for the first time in Virginia Beach a fast-growing Asian plant that thrives on dunes and crowds out native species.

- Our office designed and supervised the construction of the sand dune system in East Beach – a project that has been awarded the “Best of the Best” Restored Beach in the Northeast by the American Shore and Beach Preservation Association.

- Our office created a comprehensive Beach and Dune Management Guidance Document that has been formally adopted by City Council and serves as a state and national model.

- Our office developed the Native Plants for Dune Restoration and Habitat Diversity guide. This publication is the only one we are aware of that lists both native dune plants and nurseries or vendors that sell them.

The Science

- **Norfolk's shoreline is unique and our dune management strategies reflect that. We have learned through experience that what's appropriate elsewhere often does not work here.**

- Sand fencing is best used to control people, not to capture sand. (The Dune Book, pages 21-23)

- Almost all problems with sand dunes can be traced to a human cause.


4361
3 4 '86

Cape Point, Hatteras, NC


11/13/2009


11/17/2009

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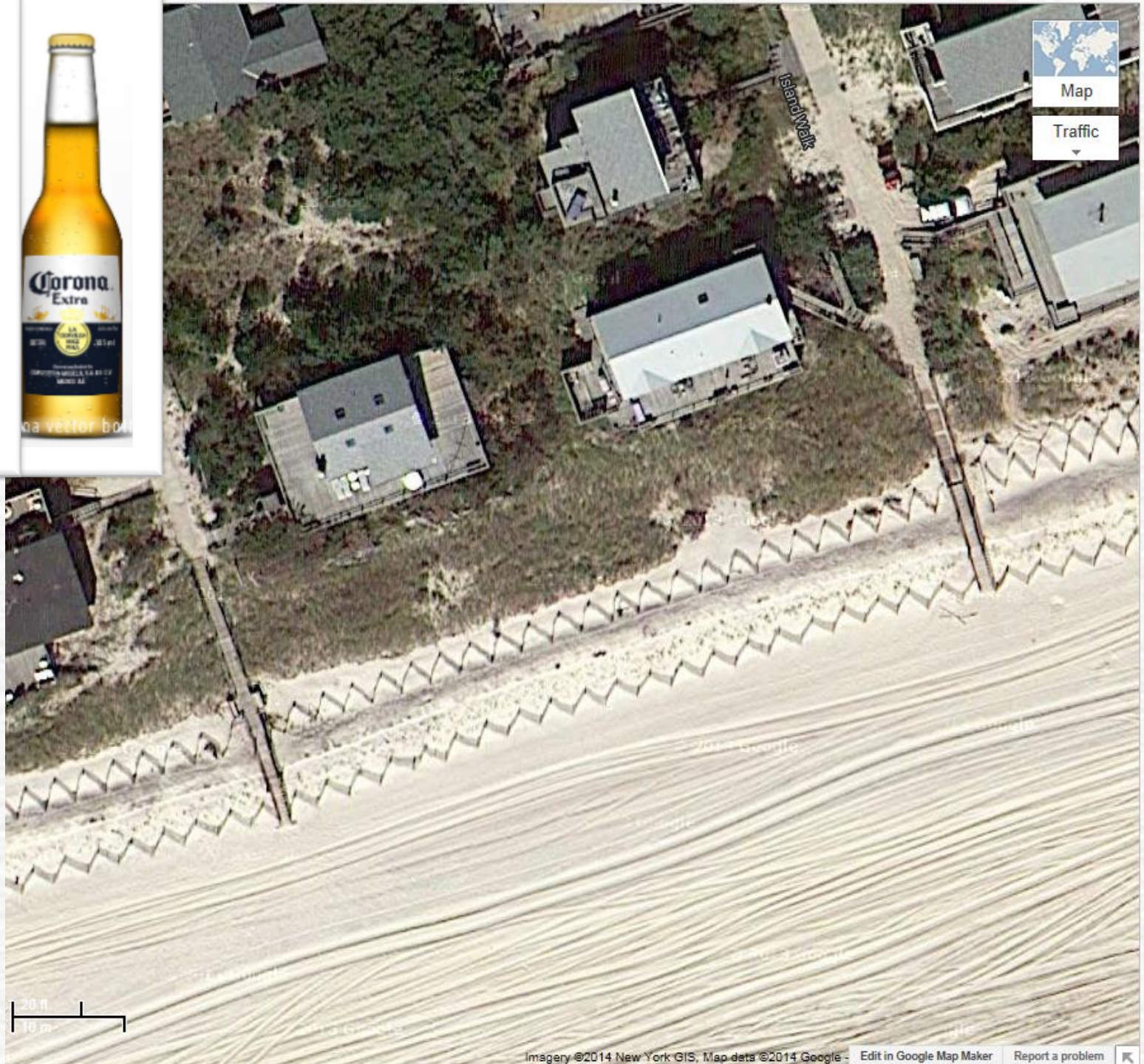
The Conundrum

Dune Vegetation ⇨

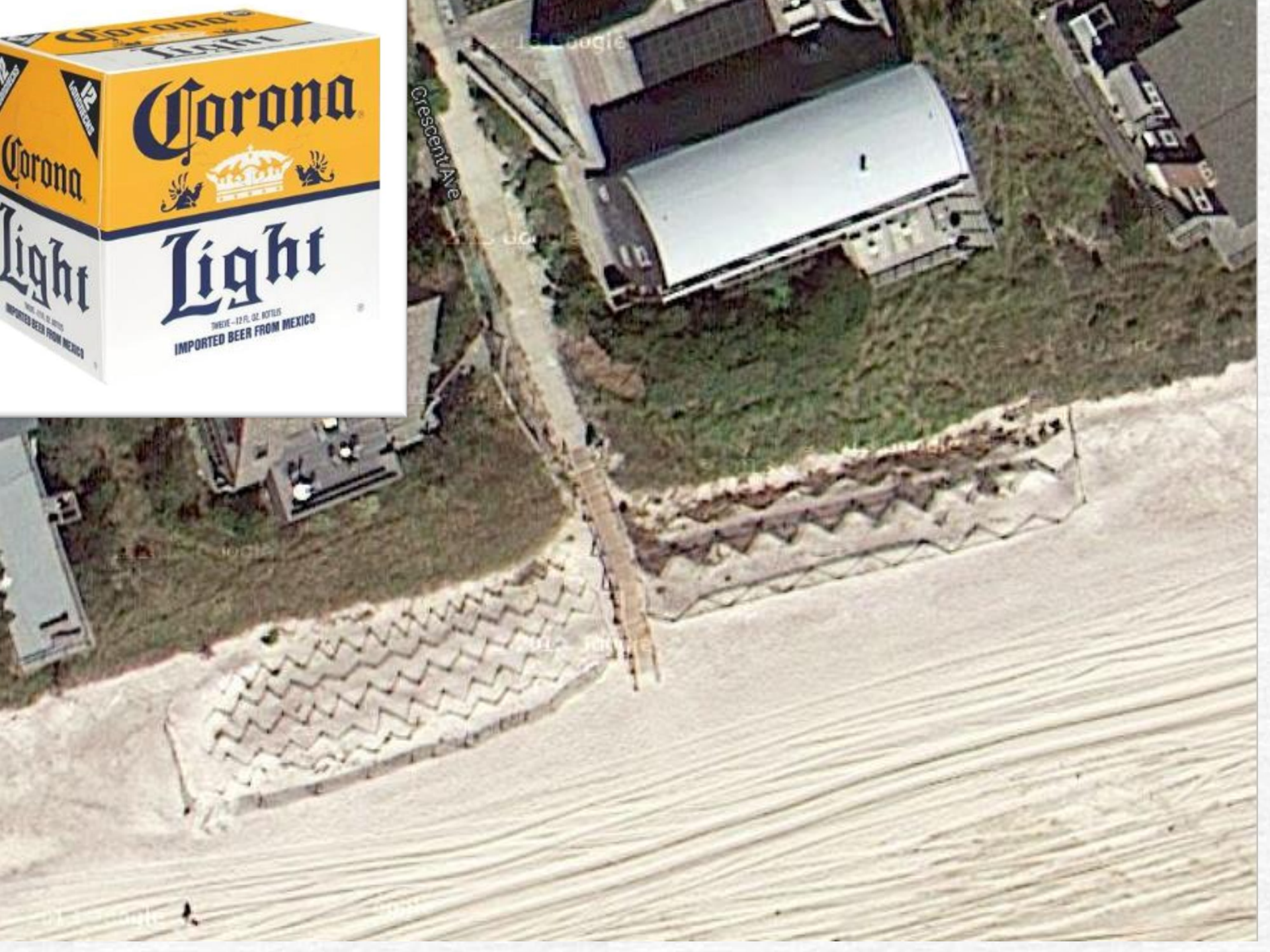
Sand Fence ⇨


Corona
Extra
Map
Traffic
S Walk
S Walk
S Walk
Sandpiper Walk
Spruce Walk


Corona
Extra
Corona
Extra


Island Walk
Map
Traffic
20 ft
10 m
Imagery ©2014 New York GIS, Map data ©2014 Google -
Edit in Google Map Maker
Report a problem


Corona
Extra
Monte Cristo Walk
Map
Traffic
Imagery ©2014 New York GIS, Map data ©2014 Google -
Edit in Google Map Maker
Report a problem


Corona
Light
Corona
Light
IMPORTED BEER FROM MEXICO
Crescent Ave


9th Bay St.
157 ft.
MLW
30-40 ft.
Old Dune Toe
11/18/03


05/06/2008


11/13/2009


2015/03/25


01/18/2008


10/10/2008

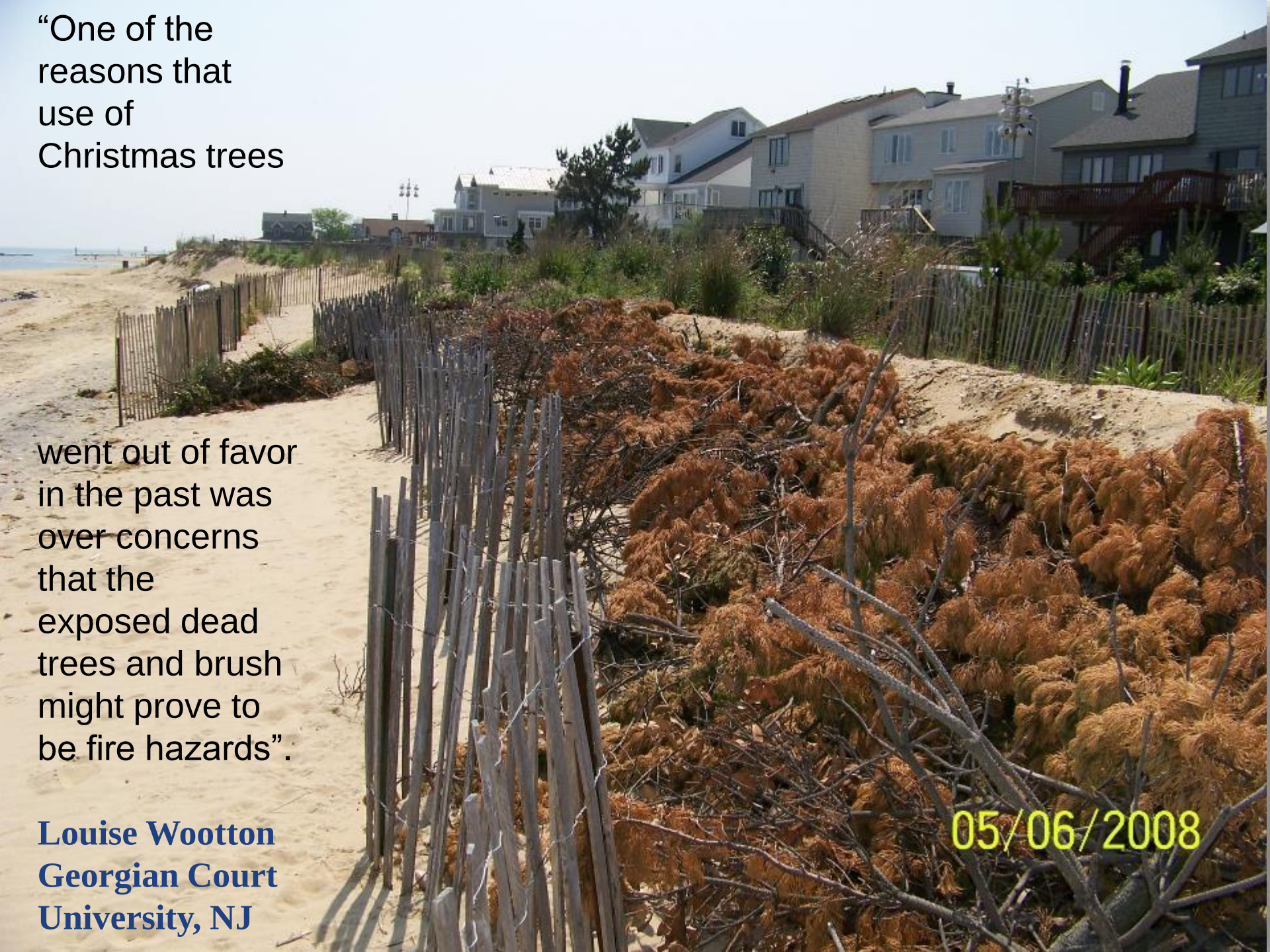

10/10/2008


12 23 2003


2015/03/09


2015/03/24


05/06/2008


“One of the reasons that use of Christmas trees
went out of favor in the past was over concerns that the exposed dead trees and brush might prove to be fire hazards”.
Louise Wootton
Georgian Court University, NJ
05/06/2008


07/23/2007

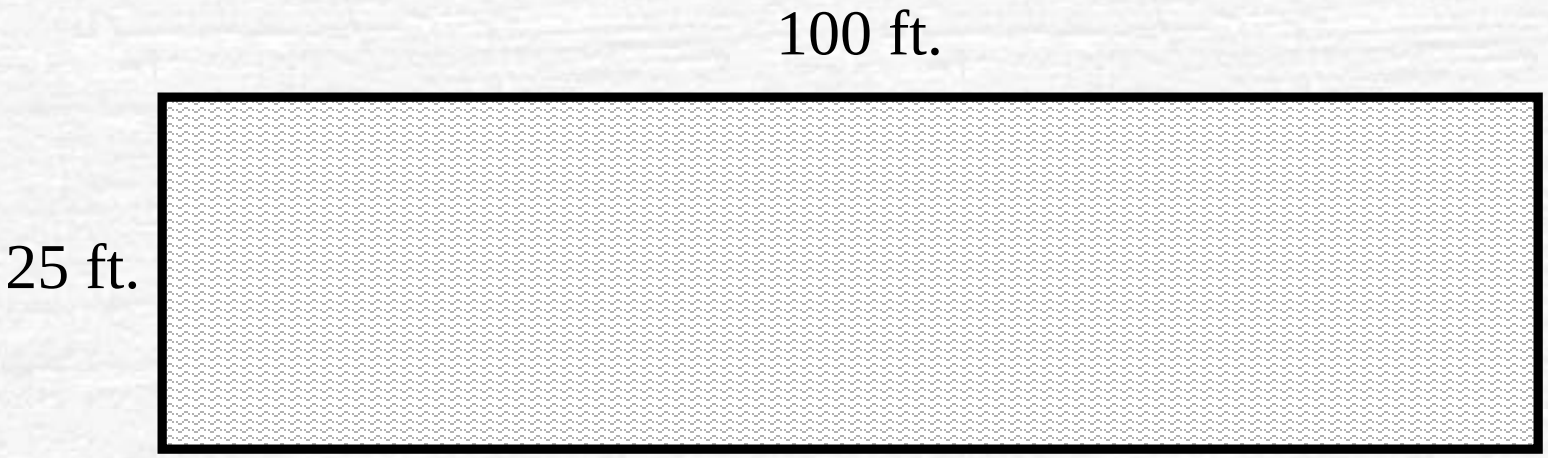
A Better, Sustainable Approach


No Sand Fence, just ABG


2015/03/25


11/18/2009

DESCRIPTION	QTY	UNIT	UNIT PRICE
Mobilization/Demobilization	1	LS	$ 6,875.23
Planting (ABG)	12,268	SY	$ 1.32
Fence Install	970	LF	$ 9.25
Fence Removal	605	LF	$ 5.00
Post Removal	30	EA	$ 2.50
Debris Removal	1	LS	$ 4,850.00
Japanese Sedge Removal	31,933	SY	$ 0.47

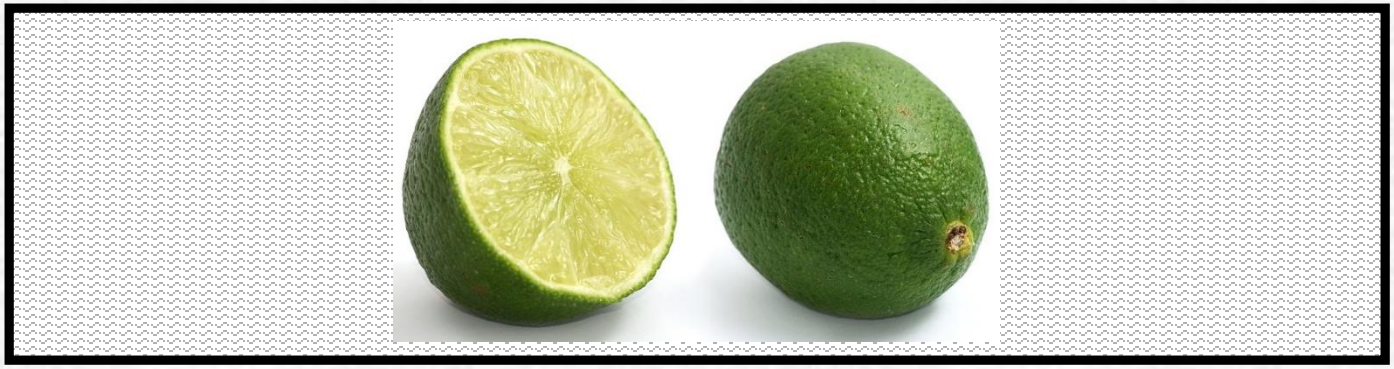


Sand Fence	250 LF	$ 9.25 per LF	Cost: $2,313
Planting (ABG)	277 SY	$ 1.32 per SY	Cost: $366

Norfolk's seven miles of shoreline could be planted with beach grass for $135,000. It would cost $855,000 to fence it, and an additional $462,000 to remove it after it deteriorates in 4-5 years.

100 ft.

25 ft.



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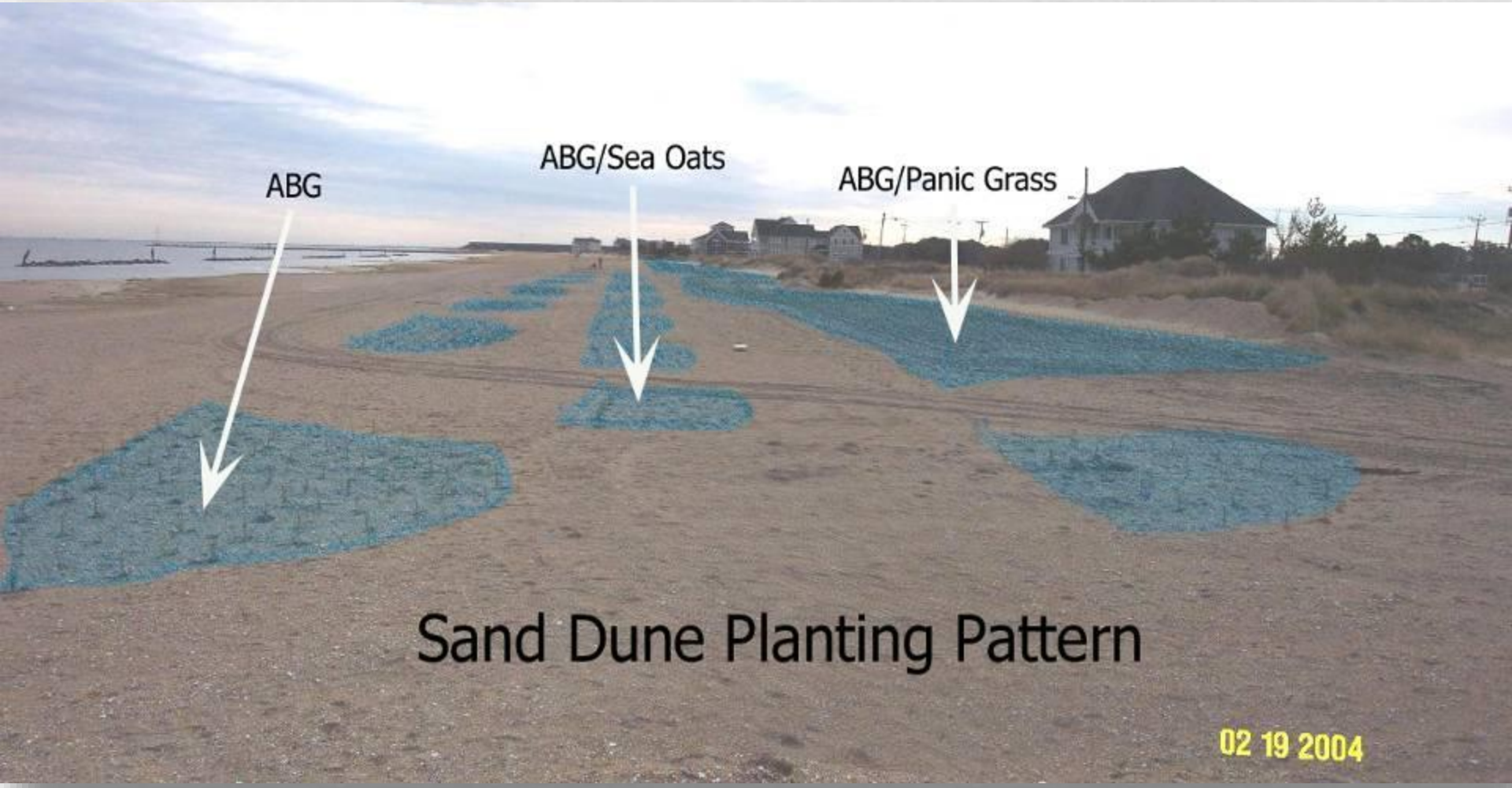
When Does the City Support the Use of Sand Fencing?

- When the dune feature is absent (or completely destroyed by storms) and must be recreated on a flat beach.
- To control detrimental impacts on dune plantings while they get established.
- To provide temporary relief to migrating sand when outside of the growing season.


East Beach in 1978
Photo: City of Norfolk


9 13 '85


KEEP OFF
DUNE
USE
WALKWAY
TO BEACH
2 24 '86


ABG
ABG/Sea Oats
ABG/Panic Grass
Sand Dune Planting Pattern
02 19 2004


02 25 2004


02 25 2004


02 19 2004


02 19 2004


02 25 2004


2015/03/13

American Shore & Beach Preservation Association designated East Beach:

One of the Best Restored Beaches in the U.S. in 2007

“Best of the Best”
Restored Beach in the Northeast in 2012

The Science

- Norfolk's shoreline is unique and our dune management strategies reflect that. We have learned through experience that what's appropriate elsewhere often does not work here.

- Sand fencing is best used to control people, not to capture sand. (The Dune Book, pages 21-23)

- **Almost all problems with sand dunes can be traced to a human cause.**


2015/03/24

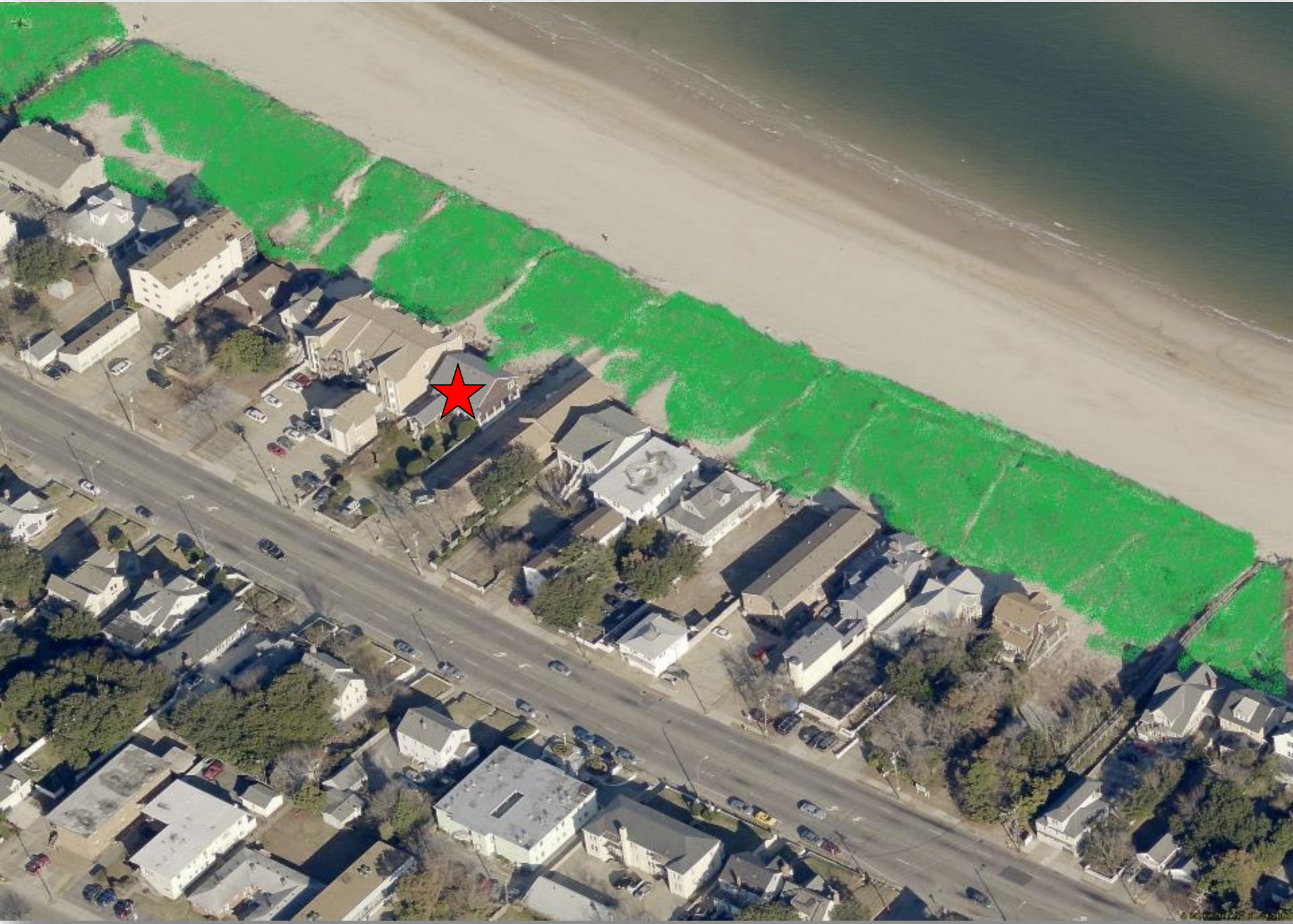

4 14 '88


5 28 '85


9 24 '87

4 1 '85


4 3 '85



Dune Management Goal

- Maintain the integrity of the natural dunes and address issues where sand is migrated beyond the dune zone.


05/31/2007


KOBELCO

Dune Management Goal

- Establish a continuous dune line from the tip of Willoughby Spit to the Little Creek Channel.


09 20 2003


Hurricane Isabel Damage –
19th Bay & Bay Oaks
09 19 2003


9/19/03


Lea View
Willoughby Beach
700-900 WOV
Chesapeake Bay
I-64 Exit 272
64
I-64 Exit 273
I-64 Exit 273
Hampton Roads
60
Central OV
168
Ocean View
E Ocean View Ave
Modoc Ave
Bay View Beach
Bellinger Blvd
I-64 Exit 274
460
Merrimack Park
Oceanair
Northside
Tidewater Dr
Devon St
194
60
East Beach
Brookfield Park
East Ocean View
Pleasant Ave
Pretty Lake Ave
Larrymore Acres
Norfolk NAS / Chambers Field
Sunset Dr
Arc St
Colonial Heights
Pythian Blvd
564
64
I-64 Exit 276


2 12'98


200 Feet
NEW BEACH
150 Feet
120 Feet
NEW DUNE
24th Bay
25th Bay
26th Bay

Photo by VIMS Shoreline Studies


Lea View
Willoughby Beach
700-900 WOV
Chesapeake Bay
I-64 Exit 272
64
I-64 Exit 273
I-64 Exit 273
Hampton Roads
60
Central OV
168
Ocean View
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Norfolk NAS / Chambers Field
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Arc St
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Pythian Blvd
564
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I-64 Exit 276

05 21 2003


New Dune


Lea View
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07 08 2005


Lea View
Willoughby Beach
700-900 WOV
Chesapeake Bay
I-64 Exit 272
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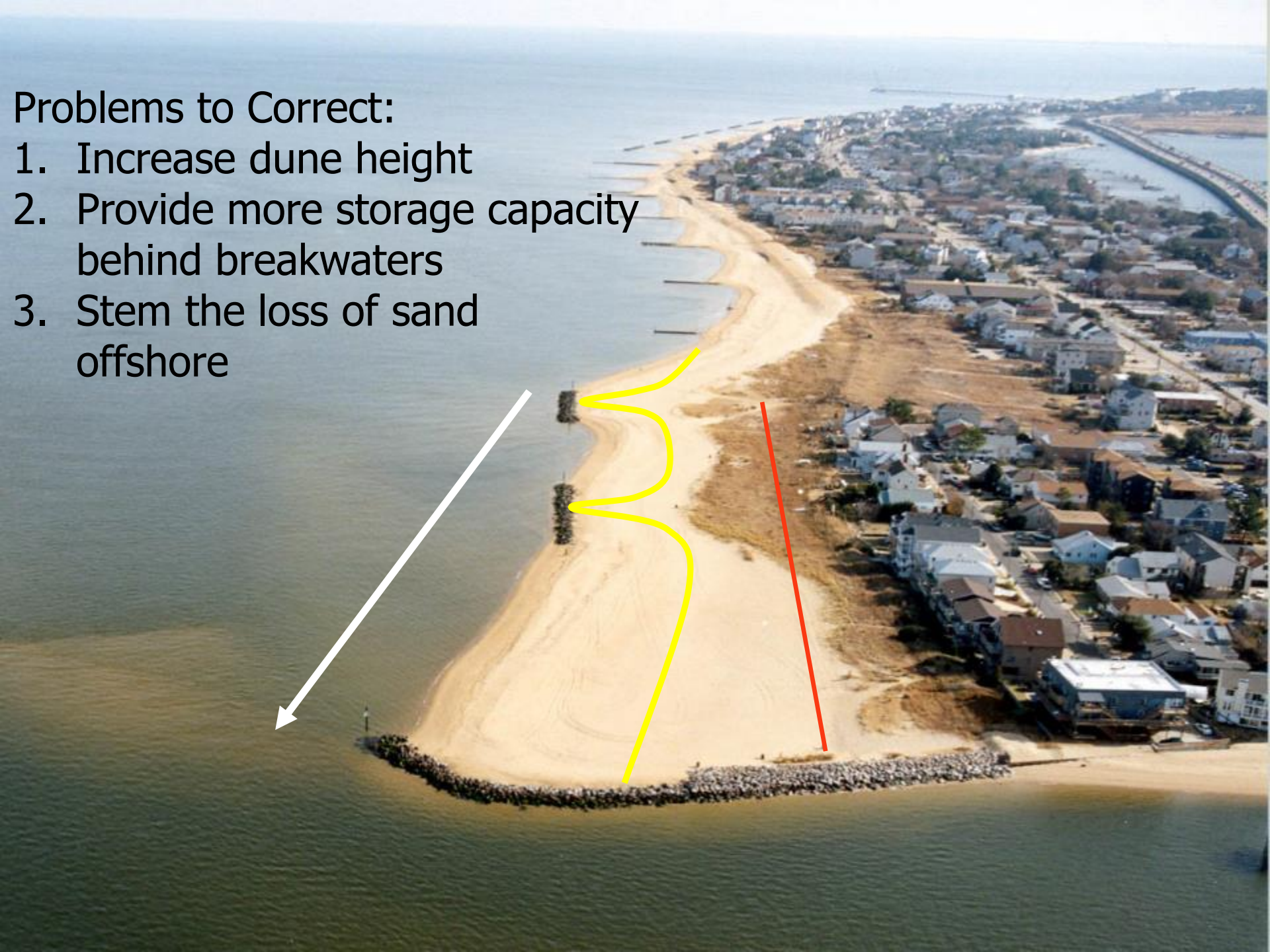
I-64 Exit 276

Lea View Ave. - After the Ash Wednesday Storm of 1962


1978

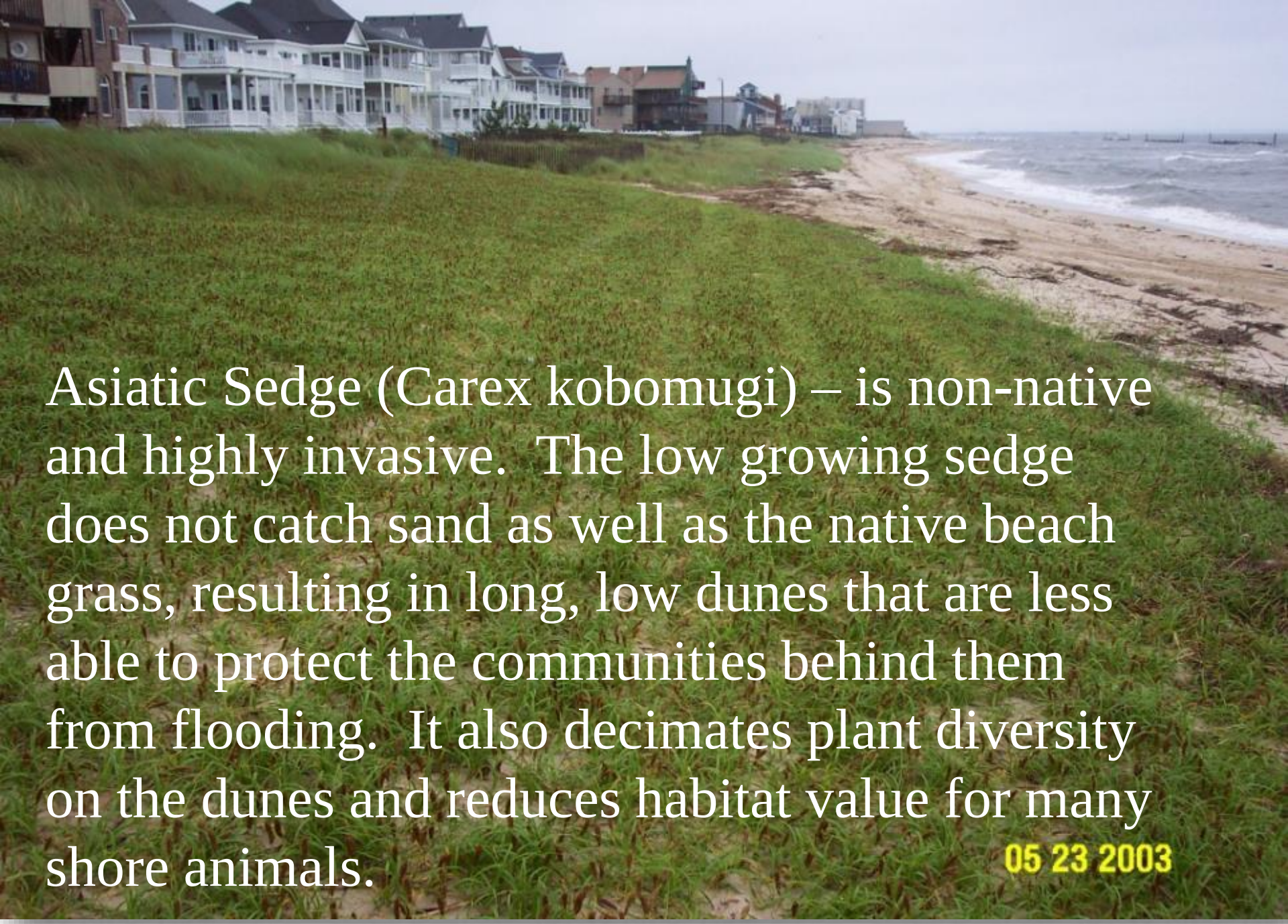

2003


Problems to Correct:
1. Increase dune height
2. Provide more storage capacity behind breakwaters
3. Stem the loss of sand offshore

Dune Management Goal

- Undertake a yearly program to control the spread of invasive dune plants such as Japanese Sedge (Carex kobomugi)


05 23 2003



Asiatic Sedge (Carex kobomugi) – is non-native and highly invasive. The low growing sedge does not catch sand as well as the native beach grass, resulting in long, low dunes that are less able to protect the communities behind them from flooding. It also decimates plant diversity on the dunes and reduces habitat value for many shore animals.


2015/03/25


05/15/2008


06/05/2009


To use the shield (for wiping beneath obstructable vegetation), insert pad, EL first, through one end of the shield until the drip flange fits snugly into the opposite end of the shield. Shield is properly installed when it covers the top area of the pad when in use. To get new wiping area on the pad, reverse EL (end for end) in the pad. For long life of pad, wash thoroughly in sudsy water, dry and store.
Always follow herbicide manufacturers labeled instructions.

Japanese Sedge Eradication	31,933	SY	$	0.47 SY

The City of Norfolk's Program to Manage Beaches & Sand Dunes